

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method ~~to manufacture~~ for manufacturing composite polymer electrolyte membranes coated with inorganic thin films for a fuel cells cell, comprising a step of wherein composite membranes are obtained by coating the a surface of polymer electrolyte membranes membrane with inorganic thin films film, thereby obtaining the composite membrane.

2. (Currently Amended) The method of claim 1, wherein ~~the inorganic materials~~ material of said the inorganic thin film is selected from the group consisting of ~~are chosen one or more from the group comprising~~ silicon oxide (SiO_2), titanium oxide (TiO_2), zirconium oxide (ZrO_2), zirconium phosphate ($\text{Zr}(\text{HPO}_4)_2$), zeolite, silicalite, and aluminum oxide (Al_2O_3).

3. (Currently Amended) The method of claim 1, wherein said the polymer electrolyte membranes are membrane comprises perfluorosulfonic acid membrane membranes such as Nafion[®] membrane, Dow membrane, Flemion membrane, Aciplex membrane, BAM, or Gore select membrane; electrolyte membrane membranes made of proton conducting hydrocarbon material materials such as sulfonic polysulfonide, sulfonic polyethylene, sulfonic polypropylene, sulfonic polystyrene, sulfonic polyphenol formaldehyde, polystyrene divinylbenzene sulfonic acid, sulfonic polybenzimidazol, sulfonic polyamide, or sulfonic polyether ether ketone; or electrolyte membrane membranes made of proton conducting fluorine material materials such as sulfonic polyvinylidene fluoride, sulfonic polytetrafluorethylene, or

fluoric-ethylene-propylene.

4. (Currently Amended) The method of claim 19 wherein said the PECVD method uses reactants comprising one or more organic metal compounds comprising monomers chosen from the group of organic metal compounds containing aluminum, titanium, silicon, or and zirconium, in conjunction with one or more gases selected from the group consisting of out of the group of oxygen, nitrogen, hydrogen, steam, and argon.

5. (Currently Amended) The method of claim 4 wherein said the organic metal compounds are one or more selected from the group consisting of ~~chosen from the group comprising~~ trimethyl disiloxanes (TMDSO), hexamethyl disiloxane (HMDSO), hexamethyl disilane, tetraethyl orthosilicate (TEOS), tetramethyl orthosilicate, tetrabutyl orthosilicate, tetraisopropyl orthosilicate, aluminium methoxide, aluminium ethoxide, aluminium butoxide, aluminium isopropoxide, titanium ethoxide, titanium methoxide, titanium butoxide, titanium isopropoxide, zirconium ethoxide, and zirconium butoxide.

6. (Canceled)

7. (Previously Presented) The method of claim 20 wherein said reactive sputtering process is characterized to use a 99 % or higher pure metal target such as Si, SiO₂, SiNH, Al, Zr, or Ti, and to maintain its initial pressure at a high vacuum range of $1.0 \cdot 10^{-3}$ torr to $1.0 \cdot 10^{-6}$ torr.

8. (Currently Amended) The method of claim 19 wherein said the PECVD method is characterized to have has a microwave power at the range of 10 watts to 500 watts.

9. (Currently Amended) The method of claim 19 wherein ~~the~~ a reaction chamber pressure of ~~said the~~ the PECVD method is in the range of 1.0 to 1000 millitorr.

10. (Currently Amended) The method of claim 19 wherein ~~the an~~ an argon pre-treatment electromagnetic wave power of ~~said the~~ the PECVD method is in the range of 10 watts to 500 watts.

11. (Currently Amended) The method of claim 19 wherein ~~the a~~ a argon pre-treatment pressure of ~~said the~~ the PECVD method is in the range of 1.0 to 500 millitorr.

12. (Currently Amended) The method of claim 19 wherein ~~the a~~ a reaction gas pressure in ~~the a~~ a chamber of ~~said the~~ the PECVD ~~process~~ method is in the range of 10 to 500 millitorr.

13. (Currently Amended) The method of claim 1 wherein ~~the a~~ a thickness of ~~said the~~ the inorganic ~~thin film films~~ thin film is in the range of 1.0 to 500 nm.

14. (Currently Amended) The method of claim 1 ~~wherein said manufacturing method~~ further ~~comprises~~ comprising a step of coating ~~the a~~ a surface of ~~electrolyte the composite~~ the composite membrane with a proton-conducting ionomer solution, after coating ~~said the~~ the inorganic ~~thin film~~ thin film on the ~~said membrane~~ surface of polymer electrolyte membrane, so as to enhance contact with ~~the electrodes during manufacturing membrane-electrode assembly.~~

15. (Withdrawn) A composite polymer electrolyte membrane coated with inorganic thin films for fuel cells manufactured according to claim 1.

16. (Withdrawn) An MEA employing the composite polymer electrolyte membranes coated with inorganic thin films manufactured according to claim 1.

17. (Currently Amended) A method of for manufacturing an MEA including comprising a process step of coating catalysts catalyst for electrodes electrode directly on the composite ~~polymer-electrolyte membranes coated with inorganic thin films~~ manufactured according to claim 1.

18. (Withdrawn) A fuel cell employing the composite polymer electrolyte membranes coated with inorganic thin films or the MEA containing the said composite membrane manufactured according to claim 1.

19. (Previously Presented) The method of claim 1 wherein the inorganic thin film is coated on the surface of the polymer electrolyte membrane using a plasma enhanced chemical vapor deposition (PECVD) method.

20. (Previously Presented) The method of claim 1 wherein the inorganic thin film is coated on the surface of the polymer electrolyte membrane using a reactive sputtering method.

21. (Previously Presented) The method of claim 20 wherein said reactive sputtering method is characterized to have a microwave power at the range of 10 watts to 500 watts.

22. (Previously Presented) The method of claim 20 wherein the reaction chamber pressure of said reactive sputtering method is in the range of 1.0 to 1000 millitorr.

23. (Previously Presented) The method of claim 20 wherein the argon pre-treatment electromagnetic wave power of said reactive sputtering method is in the range of 10 watts to 500 watts.